

DM7490A

Decade and Binary Counter

The DM7490A monolithic counter contains four master-slave flip-flops and additional gating to provide a divide-by-two counter and a three-stage binary counter for which the count cycle length is divide-by-five.

The counter has a gated zero reset and also has gated set-to-nine inputs for use in BCD nine's complement applications.

To use the maximum count length (decade or four-bit binary), the B input is connected to the Q_A output. The input count pulses are applied to input A and the outputs are as described in the appropriate Function Table. A symmetrical divide-by-ten count can be obtained from the counters by connecting the Q_D output to the A input and applying the input count to the B input which gives a divide-by-ten square wave at output Q_A .

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All re-creations are done with the approval of the Original Component Manufacturer. (OCM)

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OCM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

FOR REFERENCE ONLY

DM7490A Decade and Binary Counter

General Description

The DM7490A monolithic counter contains four master-slave flip-flops and additional gating to provide a divide-by-two counter and a three-stage binary counter for which the count cycle length is divide-by-five.

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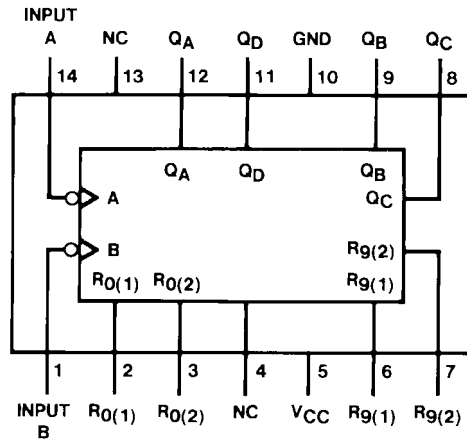
Features

- Typical power dissipation 145 mW
- Count frequency 42 MHz

Ordering Code:

Order Number	Package Number	Package Description
DM7490AN	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide

Connection Diagram



Absolute Maximum Ratings(Note 3)

Supply Voltage	7V
Input Voltage	5.5V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C

Note 3: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.75	5	5.25	V
V_{IH}	HIGH Level Input Voltage	2			V
V_{IL}	LOW Level Input Voltage			0.8	V
I_{OH}	HIGH Level Output Current			-0.8	mA
I_{OL}	LOW Level Output Current			16	mA
f_{CLK}	Clock Frequency (Note 4)	A	0	32	MHz
		B	0	16	
t_W	Pulse Width (Note 4)	A	15		ns
		B	30		
		Reset	15		
t_{REL}	Reset Release Time (Note 4)	25			ns
T_A	Free Air Operating Temperature	0		70	°C

Note 4: $T_A = 25^\circ\text{C}$ and $V_{CC} = 5\text{V}$.

DC Electrical Characteristics

over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 5)	Max	Units
V_I	Input Clamp Voltage	$V_{CC} = \text{Min}$, $I_I = -12 \text{ mA}$			-1.5	V
V_{OH}	HIGH Level Output Voltage	$V_{CC} = \text{Min}$, $I_{OH} = \text{Max}$ $V_{IL} = \text{Max}$, $V_{IH} = \text{Min}$	2.4	3.4		V
V_{OL}	LOW Level Output Voltage	$V_{CC} = \text{Min}$, $I_{OL} = \text{Max}$ $V_{IH} = \text{Min}$, $V_{IL} = \text{Max}$ (Note 6)		0.2	0.4	V
I_I	Input Current @ Max Input Voltage	$V_{CC} = \text{Max}$, $V_I = 5.5\text{V}$			1	mA
I_{IH}	HIGH Level Input Current	$V_{CC} = \text{Max}$ $V_I = 2.7\text{V}$	A		80	μA
			Reset		40	
			B		120	
I_{IL}	LOW Level Input Current	$V_{CC} = \text{Max}$ $V_I = 0.4\text{V}$	A		-3.2	mA
			Reset		-1.6	
			B		-4.8	
I_{OS}	Short Circuit Output Current	$V_{CC} = \text{Max}$ (Note 7)	-18		-57	mA
I_{CC}	Supply Current	$V_{CC} = \text{Max}$ (Note 8)		29	42	mA

Note 5: All typicals are at $V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$.

Note 6: Q_A outputs are tested at $I_{OL} = \text{Max}$ plus the limit value of I_{IL} for the B input. This permits driving the B input while maintaining full fan-out capability.

Note 7: Not more than one output should be shorted at a time.

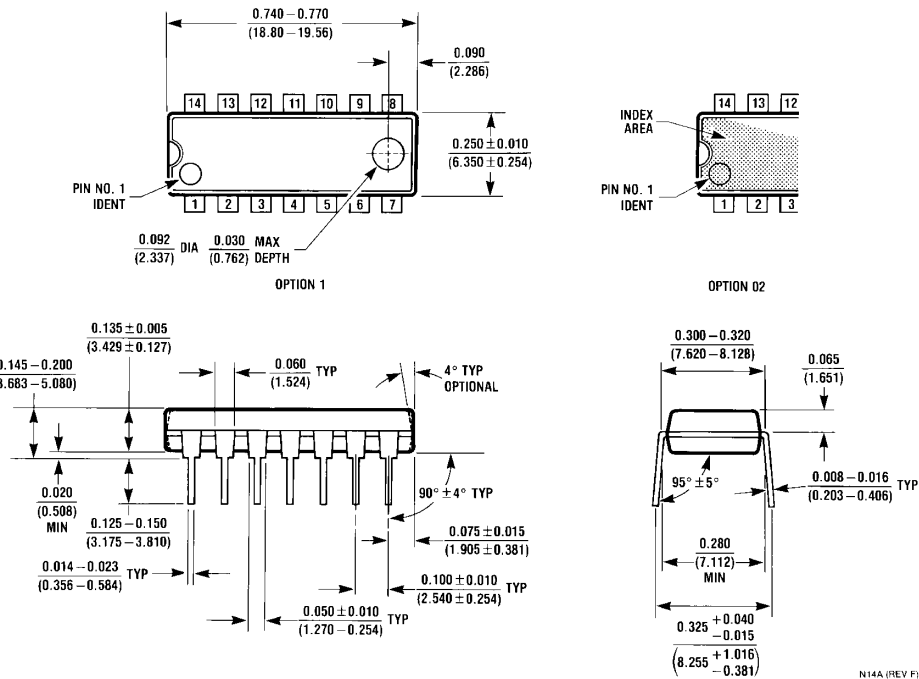
Note 8: I_{CC} is measured with all outputs open, both RO inputs grounded following momentary connection to 4.5V, and all other inputs grounded.

AC Switching Characteristics

at $V_{CC} = 5V$ and $T_A = 25^\circ C$

Symbol	Parameter	From (Input) To (Output)	$R_L = 400\Omega, C_L = 15\text{ pF}$		Units
			Min	Max	
f_{MAX}	Maximum Clock Frequency	A to Q_A	32		MHz
		B to Q_B	16		
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	A to Q_A		16	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	A to Q_A		18	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	A to Q_D		48	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	A to Q_D		50	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	B to Q_B		16	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	B to Q_B		21	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	B to Q_C		32	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	B to Q_C		35	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	B to Q_D		32	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	B to Q_D		35	ns
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	SET-9 to Q_A, Q_D		30	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	SET-9 to Q_B, Q_C		40	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	SET-0 Any Q		40	ns

Physical Dimensions inches (millimeters) unless otherwise noted



14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide Package Number N14A

N14A (REV F)

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